

REMARKS

Favorable reconsideration, reexamination, and allowance of the present patent application are respectfully requested in view of the foregoing amendments and the following remarks. The foregoing amendments are fully supported, at least, in the original claims. No new matter is added. Since the amendments reflect the incorporation of dependent claims into independent claim 12, no new issues are presented, and consideration thereof is respectfully requested.

Amendments

Claims 12, 15-16, 19, and 21-24 were previously pending. Claims 1-11, 13-14, 17-18, and 20 were previously cancelled. Claims 21-22, and 24 are currently cancelled. Claims 12 and 23 are amended to incorporate the limitations of cancelled claim 21 and 24.

Rejection under 35 U.S.C. § 112, first paragraph

In the Office Action, beginning at page 2, Claims 12, 19, and 21-22 were rejected under 35 U.S.C. § 112, first paragraph, as reciting subject matters that allegedly fail to comply with the written description requirement. Applicant respectfully requests reconsideration of this rejection.

On page 2 of the Office Action, it is stated that the “increase in expression is achieved by an modification in an expression control sequence of said gene.” Although Applicants do not necessarily agree with this characterization, claim 12 has been amended to specify the methods by which expression of the stated genes can be increased. These methods include increasing the copy number of said gene and placing said gene under the control of a potent promoter. The latter method was previously recited in claim 23, which was not rejected under this section. Therefore, the claims are fully described.

For at least the foregoing reasons, Applicant respectfully submits that the Claims fully comply with 35 U.S.C. § 112, first paragraph (written description), and therefore respectfully requests withdrawal of the rejection thereof under 35 U.S.C. § 112.

In the Office Action, beginning at page 3, Claims 12, 19, and 21-22 were rejected under 35 U.S.C. § 112, first paragraph, as reciting subject matters that allegedly fail to comply with the scope of enablement requirement. Applicant respectfully requests reconsideration of this rejection.

Similar to the above rejection for an alleged lack of written description, and although Applicants do not necessarily agree with the reasons for the rejection, claim 12 has been amended to recite the specific modifications which can be made to increase the expression of the recited gene. Specifically, the limitations of claim 23 have been incorporated into claim 12. Since claim 23 was not rejected under this section, claim 12 is fully enabled by the specification.

For at least the foregoing reasons, Applicant respectfully submits that the Claims fully comply with 35 U.S.C. § 112, first paragraph (enablement), and therefore respectfully requests withdrawal of the rejection thereof under 35 U.S.C. § 112.

Rejection under 35 U.S.C. § 103(a)

In the Office Action, beginning at page 5, Claims 12, 15-16, 19, and 21-22 were rejected under 35 U.S.C. § 103(a), as reciting subject matters that allegedly are obvious, and therefore allegedly unpatentable, over the disclosure of Katsumata et al. in view of the disclosure of Debabov et al., Edwards et al., and further in view of Kishino et al. Applicant respectfully requests reconsideration of this rejection.

On page 6 of the Office Action, it is argued that Katsumata teach a protein having the same enzymatic activity as the polypeptide of SEQ ID NO: 2, and the increase in L-threonine production as a result of increasing the synthesis of an enzyme from C.

glutamicum having aspartate aminotransferase activity. Furthermore, it is argued that Debabov et al. is a high L-threonine producer which has been modified to increase expression of the *thrA*, *thrB*, *thrC*, and *rhtA* genes.

It would not have been expected by the ordinarily skilled art worker that an additional increase in threonine production would result by increasing the expression of the gene depicted in SEQ ID NO: 2, because threonine production is *already* increased in a bacterium with increased expression of the *thrA*, *thrB*, *thrC*, and *rhtA* genes. Furthermore, it is acknowledged (and pointed out in the Office Action on page 6) that the *aspC* gene (SEQ ID NO: 2) encodes an enzyme which catalyzes the synthesis of aspartic acid from oxaloacetic acid. However, one of ordinary skill in the art would know that even if expression of the *aspC* gene is increased, the production of threonine would not also increase unless the supply of aspartic acid runs short. The shortage of aspartic acid will occur if the synthesis reaction of aspartic acid from oxaloacetic acid is the rate-limiting step. However, one of ordinary skill in the art would not have known which reaction is the rate-limiting step in threonine synthesis. Therefore, the additional increase in threonine as a result of the combination of increasing expression of all the recited genes is completely unexpected.

Thus, one of ordinary skill in the art would know that the achieving increased threonine production will not occur merely by increasing the expression of *aspC* in *E. coli* which has increased expression of *thrA*, *thrB*, *thrC*, and *rhtA*. Therefore, the result of the present claimed method is completely unexpected, and is a novel and unobvious result.

For at least the foregoing reasons, Applicant respectfully submits that the subject matters of the Claims, each taken as a whole, would not have been obvious to one of ordinary skill in the art at the time of Applicant's invention, are therefore not unpatentable under 35 U.S.C. § 103(a), and therefore respectfully requests withdrawal of the rejection thereof under 35 U.S.C. § 103(a).


Conclusion

For at least the foregoing reasons, Applicant respectfully submits that the present patent application is in condition for allowance. An early indication of the allowability of the present patent application is therefore respectfully solicited.

If Examiner Ramirez believes that a telephone conference with the undersigned would expedite passage of the present patent application to issue, she is invited to call on the number below.

It is not believed that extensions of time are required, beyond those that may otherwise be provided for in accompanying documents. However, if additional extensions of time are necessary to prevent abandonment of this application, then such extensions of time are hereby petitioned under 37 C.F.R. § 1.136(a), and the Commissioner is hereby authorized to charge fees necessitated by this paper, and to credit all refunds and overpayments, to our Deposit Account 50-2821.

Respectfully submitted,

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